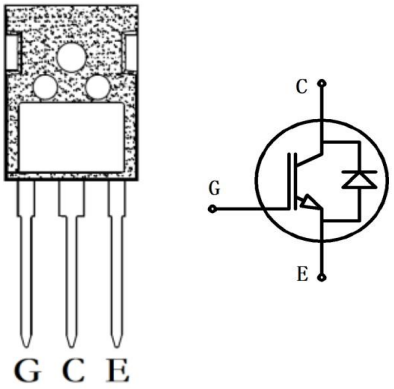
IGBT Discretes

V_{CES} = 1350V ,I_C = 30A, $V_{CE(sat)}$ = 2.3V

Features:
- Trench and Field-stop technology
- Low collector to emitter saturation voltage
- Optimized for Fast Switching
- Easy parallel switching capability
- Short circuit withstands time - 10μs



Applications:
- Induction Heating
- Soft switching application

Absolute Maximum Ratings (T_J = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Value	Unit
V_{CES}	Collector to Emitter Voltage		1350	V
V_{GES}	Continuous Gate to Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C = 100°C	30	A
		T_C = 25°C	60	A
I_{CM}	Pulse Collector Current	Pulse width limited by T_{jmax}	120	A
P_D	Maximum Power Dissipation (IGBT)	T_C = 25°C, T_J = 175°C	417	W
t_{sc}	Short Circuit Withstand Time	V_{CC} = 600V, V_{GE}≤15V	10	μs

Electrical Characteristics of IGBT (T_J = 25°C)

Static characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C = 1mA, V_{CE} = V_{GE} , T_J = 25°C		4.9	5.9	6.9	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 30A, V_{GE} = 15V	T_J = 25°C	-	2.3	-	V
			T_J= 125°C	-	2.8	-	
I_{CES}	Collector-Emitter Leakage Current	V_{GE} = 0V, V_{CE} = V_{CES}, T_J = 25°C		-	-	1.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{GE} = ±20V, V_{CE} = 0V, T_J = 25°C		-100	-	100	nA
C_{iss}	Input capacitance	V_{CE}=25V, V_{GE}=0V , f=1MHz		-	2485	-	pF
C_{oss}	Output capacitance			-	157	-	
C_{rss}	Reverse transfer capacitance			-	72	-	
R_{gint}	Internal gate resistor				1.3		Ω

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V,I_C=30A, V_{GE}=±15V,L=525uH, R_g=4.8Ω	T_J = 25°C		21		ns
			T_J = 125°C		21		
t_r	Rise Time		T_J = 25°C		24		ns
			T_J = 125°C		25		
$t_{d(off)}$	Turn-off Delay Time		T_J = 25°C		93		ns
			T_J = 125°C		100		
t_f	Fall Time		T_J = 25°C		286		ns
			T_J = 125°C		360		
E_{on}	Turn-on Switching Loss		T_J = 25°C		3.0		mJ
			T_J = 125°C		3.3		
E_{off}	Turn-off Switching Loss		T_J = 25°C		1.5		mJ
			T_J = 125°C		2.3		
$R_{\theta JC}$	Junction-To-Case (IGBT)				0.36		K/W

Electrical Characteristics of Diode (T_J = 25°C)

Static characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F=30A,V_{GE}=0V	T_J = 25°C		2.4		V
			T_J = 125°C		2.6		

Switching Characteristics

I_{rr}	Peak Reverse Recovery Current	I_F=30A, V_{CC}=600V, V_{GE}=-15V, L=525uH, R_g=4.8Ω	T_J = 25°C		54		A
			T_J = 125°C		68		
Q_{rr}	Reverse Recovery Charge		T_J = 25°C		4.5		μC
			T_J = 125°C		7.3		
E_{rec}	Reverse Recovery Energy		T_J = 25°C		1.9		mJ
			T_J = 125°C		3.3		
$R_{\theta JC}$	Junction-To-Case (Diode)				0.95		K/W

Module Characteristics

T_J	Junction Temperature	-40		+175	°C
T_{JOP}	Operating Junction Temperature	-40		+175	°C
T_{stg}	Storage Temperature	-55		+150	°C

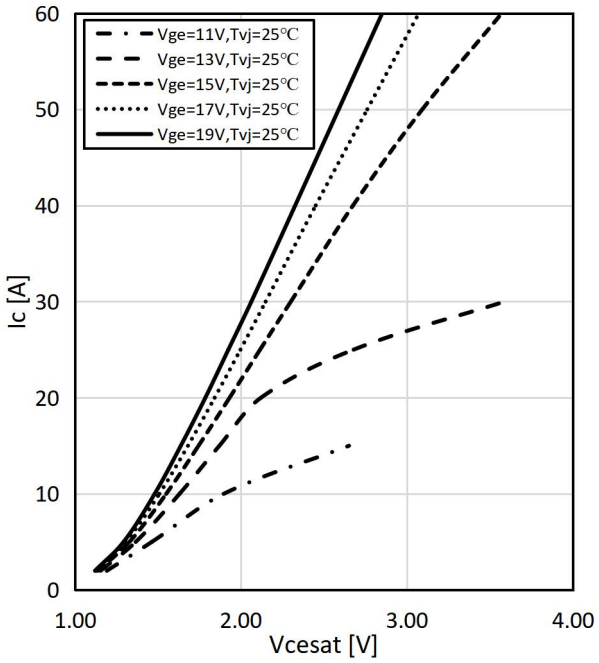


Fig.1 output characteristic IGBT Inverter (typical)

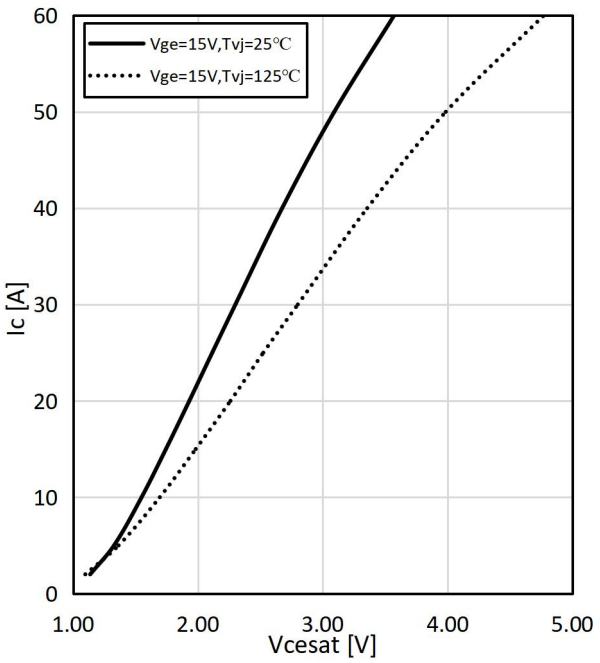


Fig.2 output characteristic IGBT Inverter (typical)

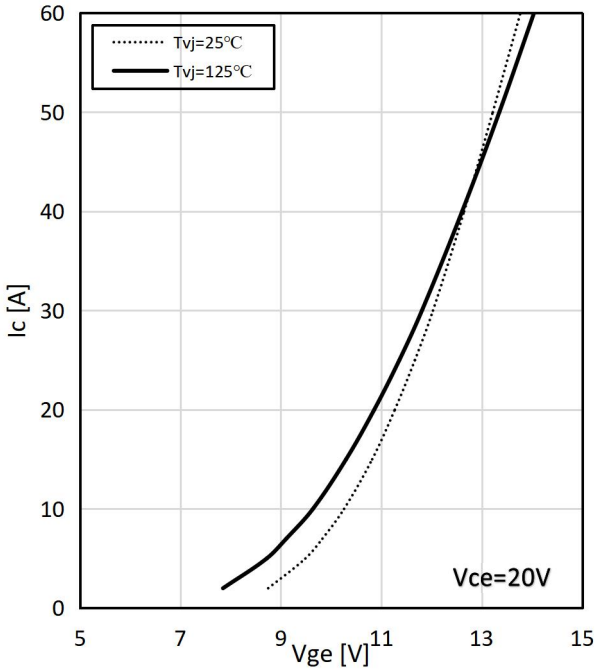


Fig.3 transfer characteristic IGBT Inverter (typical)

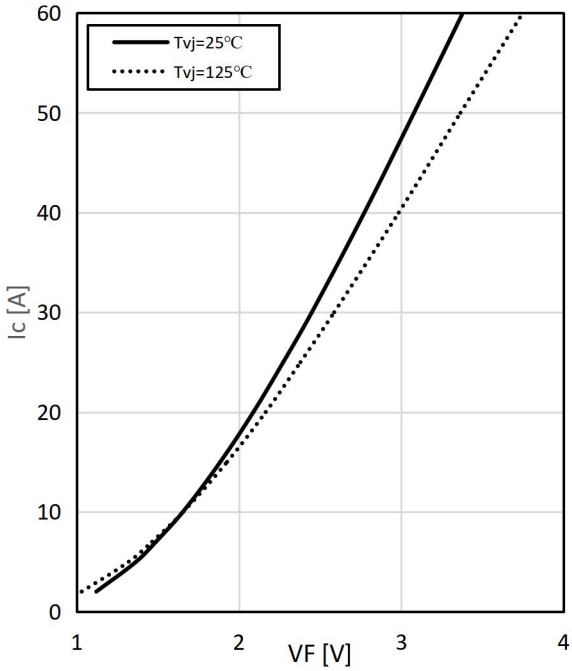


Fig.4 forward characteristic of Diode Inverter (typical)

V_{CC}=600V，V_{CE}=±15V
R_G=4.8Ω

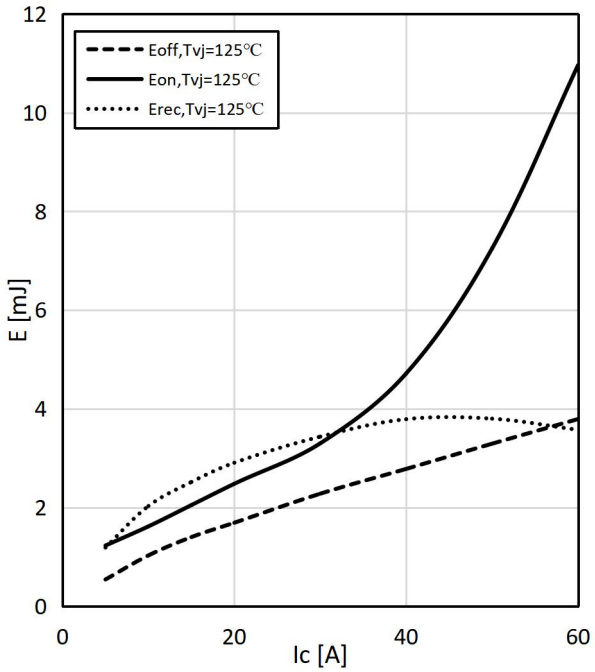


Fig.5 switching losses IGBT Inverter (typical)

V_{CC}=600V，V_{CE}=±15V
I_C=30A

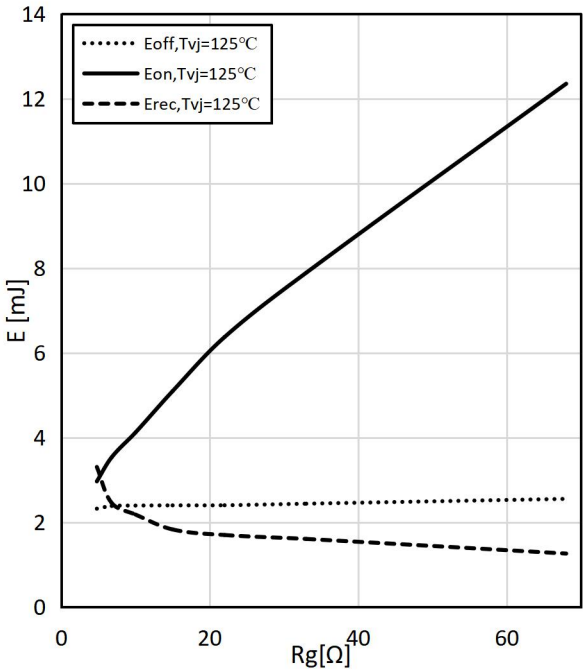


Fig.6 switching Losses vs. Gate Resistance (typical)

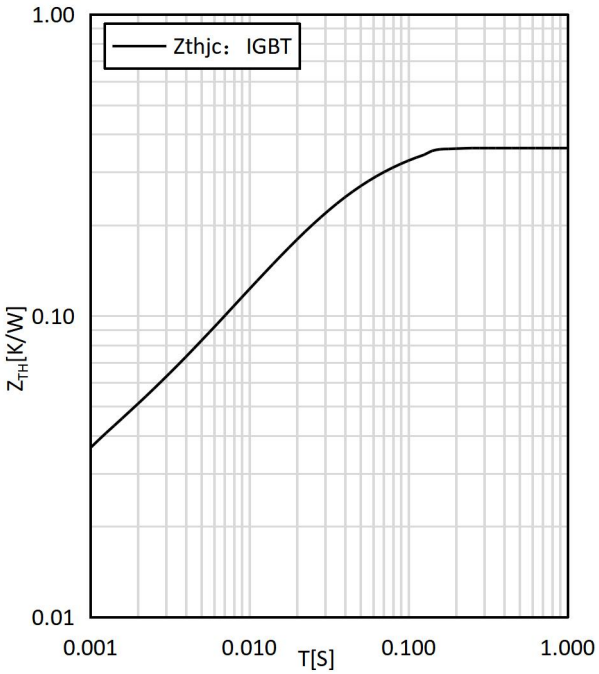


Fig.7 transient thermal impedance IGBT

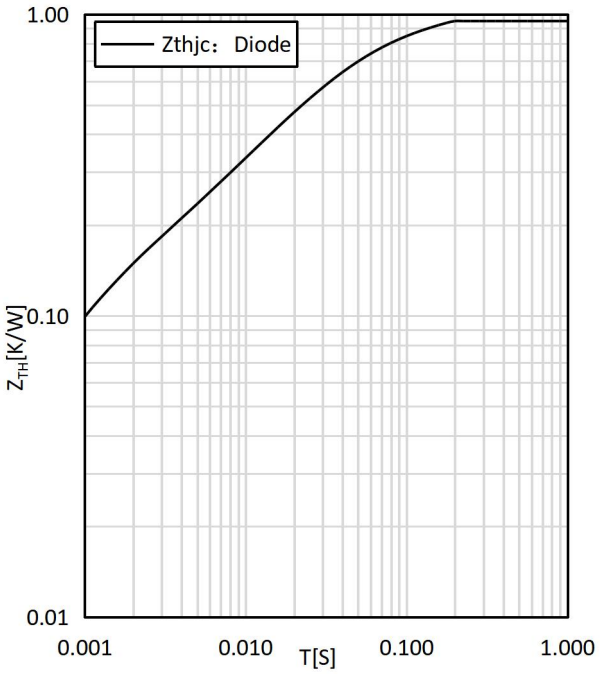
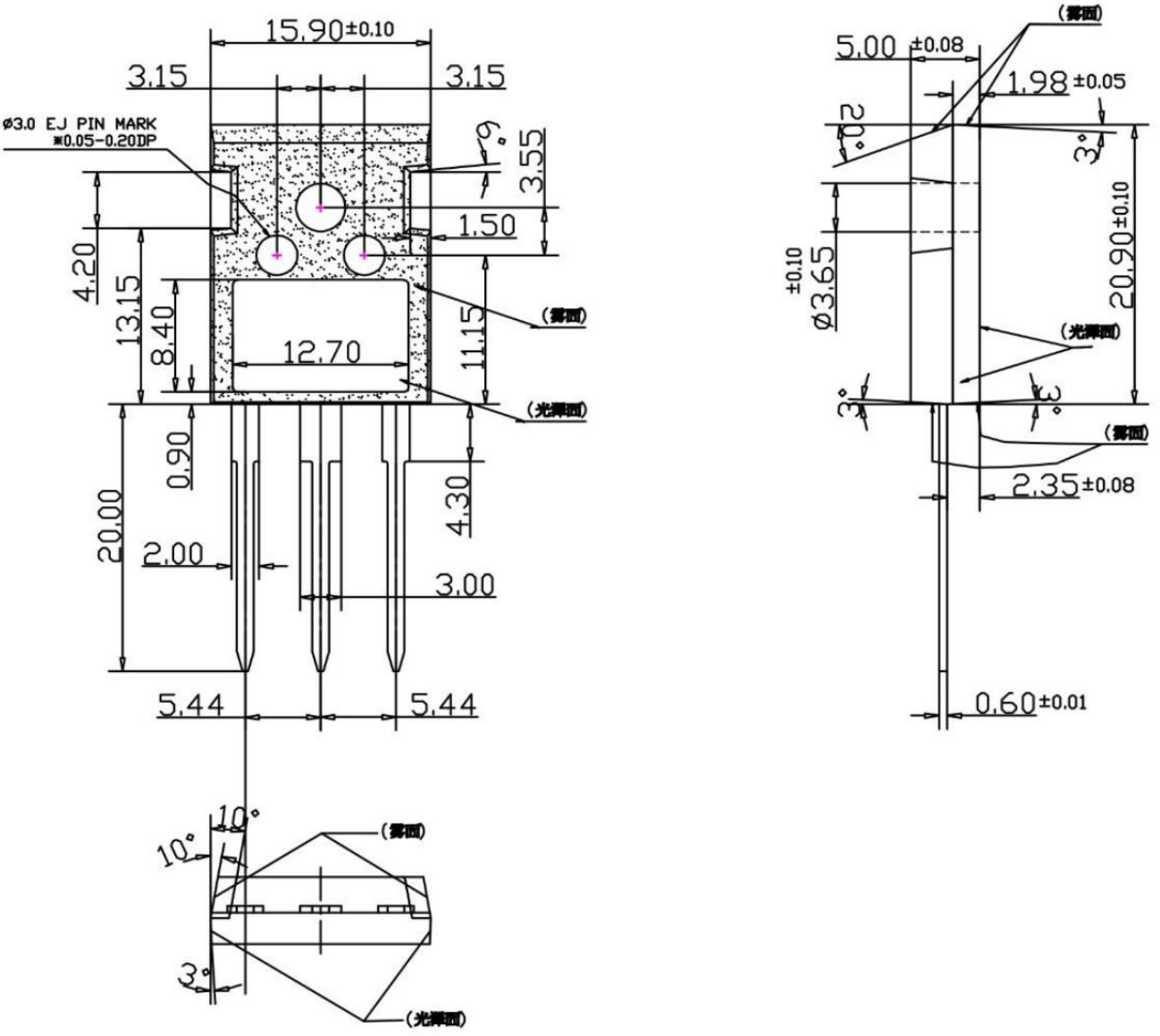


Fig.8 transient thermal impedance Diode

Package Outline (Unit: mm):



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